

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A centralized maintenance management method for a portable telephone system which makes use of the Internet, comprising ~~the steps of:~~

accessing an information providing server of a portable telephone system centralized maintenance management center ~~over the Internet~~ from a maintenance terminal ~~by a maintenance engineer who performs~~ to perform fault diagnosis and recovery operations of said portable telephone system; and

searching a database server in which fault data and a diagnosis dictionary are stored through said information providing server so that data necessary for fault diagnosis and fault recovery are acquired by said maintenance terminal.

2. (currently amended): A centralized maintenance management method for a portable telephone system as claimed in claim 1, wherein said maintenance terminal is connected for communication to one or more remote maintenance and engineering terminals of a maintaining engineer and a developing engineer in charge of a maker side of said portable telephone system ~~connected to said portable telephone system concentrated maintenance management center so~~

that said maintenance terminal can ~~enjoy supporting of support~~ a maintenance operation on-line from a remote place.

3. (original): A centralized maintenance management method for a portable telephone system as claimed in claim 1, wherein contents of said diagnosis dictionary stored in said database server are disclosed through said information providing server.

4. (original): A centralized maintenance management method for a portable telephone system as claimed in claim 1, wherein issuance of a repair request from said maintenance terminal and repair acceptance, issuance of a repair completion report and issuance of a repair progress situation report from a maker side are performed on-line through said information providing server.

5. (original): A centralized maintenance management method for a portable telephone system as claimed in claim 1, wherein state supervision data of said portable telephone system are collected by said maintenance terminal and transferred to and recorded into said database server through said information providing server, and a terminal of a maker side of said portable telephone system prepares and issues a preventive maintenance schedule based on the state supervision data and the repair data of said database server such that said maintenance terminal can access the preventive maintenance schedule through said information providing server.

6. (original): A centralized maintenance management method for a portable telephone system as claimed in claim 5, wherein a preventive maintenance operation of said portable telephone system is performed in accordance with the preventive maintenance schedule produced based on the state supervision data.

7. (original): A centralized maintenance management method for a portable telephone system as claimed in claim 5, wherein appropriate inventory management information of apparatus and panels is calculated based on the preventive maintenance schedule and provided to said maintenance terminal from said information providing server.

8. (currently amended): A centralized maintenance management method for a portable telephone system which makes use of the Internet, comprising ~~the steps of:~~
transmitting an inquiry for similar data to a fault of said portable telephone system from a remote maintenance console, which is provided to perform a fault diagnosis operation of said portable telephone system, to a database server through an information providing server of a portable telephone system concentrated maintenance management center to which said remote maintenance console is connected ~~over the Internet~~; and

searching a diagnosis dictionary in said database server having received the inquiry, extracting, when fault data similar to the fault is searched out, the similar fault data and transmitting the similar fault data as a fault inquiry result to said remote maintenance console through said information providing server.

9. (currently amended): A centralized maintenance management method for a portable telephone system as claimed in claim 8, further comprising ~~the steps of:~~

transmitting, when a fault diagnosis operation is performed by said remote maintenance console and the fault is recovered, fault recovery data to said database server through said information providing server ~~connected over the Internet;~~ and

receiving, by said database server, the fault recovery data and updating the fault data and the diagnosis dictionary stored in said database server.

10. (currently amended): A centralized maintenance management method for a portable telephone system as claimed in claim 8, further comprising ~~the steps of:~~

issuing, when data of a similar fault is not searched out from said diagnosis dictionary as a result of the search of said diagnosis dictionary by said database server, from said remote maintenance terminal, a request for supporting of a maintenance operation to a maintenance supporting console ~~of a maintenance engineer or a developing block terminal of a developing engineer in charge of a maker side~~ through said information providing server; and

receiving the maintenance supporting information ~~of the maintenance engineer or the developing engineer in charge of the maker side~~ and performing a fault diagnosis operation of said portable telephone system on said remote maintenance console side.

11. (currently amended): A centralized maintenance management method for a portable telephone system as claimed in claim 10, further comprising:

transmitting, when the fault is recovered, fault recovery data from said remote maintenance console to said maintenance supporting console and/or said development block terminal of the maker side to ~~cause the maintenance engineer or the developing engineer in charge of the maker side to~~ confirm the fault recovery data;

transmitting the fault recovery data confirmed on said maintenance supporting console and/or said development block terminal ~~by the maintenance engineer or the developing engineer in charge to~~ said database server through said information providing server; and

receiving, by said database server, the fault recovery data and updating the fault data and the diagnosis dictionary stored in said database server.

12. (currently amended): A centralized maintenance management method for a portable telephone system which makes use of the Internet, comprising ~~the steps of:~~

accessing, when a fault occurs with said portable telephone system and a request for repair of a repair article which is a faulty product or part is to be issued, an information providing server of a portable telephone system concentrated maintenance management center ~~over the Internet~~ from a remote maintenance console provided for performing a fault diagnosis operation of said portable telephone system, inputting repair request contents in accordance with a repair request input form provided by said information providing server and transmitting the repair request information to said information providing server;

passing the repair request information received by said information providing server to said database server and cumulatively storing the repair request information as repair request data into said database server;

registering a repair return date into the repair request data of said database server in accordance with a repair acceptance input form provided by said information providing server from a remote maintenance supporting console of said portable telephone system concentrated maintenance management center ~~by a maintenance supporting engineer of said portable telephone system concentrated maintenance management center;~~

issuing a repair acceptance slip from said information providing server and transmitting the repair acceptance slip to said remote maintenance console of the repair request destination and a terminal of a repair center by which repair is performed; and

inputting a printing instruction of a repair tag card to be applied to the repair article from said terminal of said repair center in accordance with a repair tag print form provided by said information providing server to print a repair tag and applying and sending the repair tag to and together with the repair article to said repair center thereby to complete the on-line repair acceptance service.

13. (currently amended): A centralized maintenance management method for a portable telephone system as claimed in claim 12, further comprising ~~the steps of:~~

inputting, when the repair of the repair article is completed, repair contents recorded on the repair tag card and a repair completion date in accordance with a repair completion date

input form provided by said information providing server and transferring and storing the repair data to and into said database server; and

issuing an instruction to issue a repair completion report from said terminal of said repair center, referring to the stored repair data to issue a repair completion report from said information providing server and sending the repair completion report to said remote maintenance console of the repair request destination and a terminal of a distribution center ~~over the Internet~~ thereby to complete the ~~on-line~~ issuance service of a repair completion report.

14. (currently amended): A centralized maintenance management method for a portable telephone system as claimed in claim 12, further comprising ~~the steps of~~:

inputting a repair progress disclosure request from said remote maintenance console in accordance with a repair progress disclosure request form of said information providing server; and

extracting, in said database server having received the repair progress disclosure request from said information providing server, identification information of the pertaining repair request article from the repair data stored in said database server and transmitting the extracted data to said remote maintenance console in accordance with an output form of said information providing server.

15. (currently amended): A centralized maintenance management method for a portable telephone system which makes use of the Internet, comprising:

~~a first step of~~ accessing an information providing server of a portable telephone system concentrated maintenance management center ~~over the Internet~~ from a remote maintenance console provided for performing a fault diagnosis operation of said portable telephone system and inputting a preventive maintenance schedule preparation request in accordance with a preventive maintenance schedule preparation input form of said information providing server;

~~a second step of~~ transmitting a state supervision data transfer request from a remote maintenance supporting console of said portable telephone system concentrated maintenance management system to said remote maintenance console through said information providing server;

~~a third step of~~ collecting state supervision data of radio base stations and mobile exchanges of said portable telephone system by said remote maintenance console and transferring the state supervision data to said database server of said portable telephone system concentrated maintenance management center ~~over the Internet~~ so that the state supervision data are stored into said database server;

~~a fourth step of~~ sending an analysis request for the repair data and the state supervision data from said remote maintenance supporting console to said information providing console, analyzing the state supervision data, spare apparatus and panel inventory management data and repair data stored in said database server through said information providing server, performing fault occurrence prediction and determining a failure ratio, calculating required quantities of

spare apparatus and panels and storing the required quantities as predictive maintenance schedule data into said database server; and

~~a fifth step of~~ preparing a preventive maintenance schedule by said remote maintenance supporting console based on the preventive maintenance schedule data stored in said database server, storing the preventive maintenance schedule into said database server through said information providing server and transmitting the preventive maintenance schedule to said remote maintenance console in accordance with a preventive maintenance schedule output form of said information providing server.

16. (currently amended): A centralized maintenance management method for a portable telephone system which makes use of the Internet, comprising ~~the steps of~~:

accessing an information providing server of a portable telephone system concentrated maintenance management center ~~over the internet~~ from a remote maintenance console provided for performing a fault diagnosis operation of said portable telephone system, inputting a service request for apparatus and panel appropriate inventory management in accordance with an appropriate inventory management service request input form of said information providing server and sending the service request to a remote maintenance supporting console of said portable telephone system concentrated maintenance management center;

issuing an appropriate inventory data processing request ~~from a maintenance supporting engineer~~ having received the service request on said remote maintenance supporting console and performing a preventive maintenance schedule preparation service which includes: ~~the second to fifth steps of claim 15;~~ transmitting a state supervision data transfer request from the remote

maintenance supporting console of said portable telephone system concentrated maintenance management system to said remote maintenance console through said information providing server;

collecting state supervision data of radio base stations and mobile exchanges of said portable telephone system by said remote maintenance console and transferring the state supervision data to said database server of said portable telephone system concentrated maintenance management center so that the state supervision data are stored into said database server;

sending an analysis request for the repair data and the state supervision data from said remote maintenance supporting console to said information providing console, analyzing the state supervision data, spare apparatus and panel inventory management data and repair data stored in said database server through said information providing server, performing fault occurrence prediction and determining a failure ratio, calculating required quantities of spare apparatus and panels and storing the required quantities as predictive maintenance schedule data into said database server; and

preparing a preventive maintenance schedule by said remote maintenance supporting console based on the preventive maintenance schedule data stored in said database server, storing the preventive maintenance schedule into said database server through said information providing server and transmitting the preventive maintenance schedule to said remote maintenance console in accordance with a preventive maintenance schedule output form of said information providing server;

executing the preventive maintenance schedule preparation service and issuing an instruction to produce apparatus and panels to a terminal of a production block from said remote maintenance supporting console through said information providing server based on the preventive maintenance schedule obtained by the preventive maintenance schedule preparation service;

delivering, after completion of the production, apparatus and panels corresponding to a shortage into a distribution center and performing inventory management in said distribution center; and

receiving a notification representing that the appropriate inventory management has been achieved from said terminal of said distribution center by said remote maintenance supporting console through said information providing server and transmitting an appropriate inventory management process completion report to said remote maintenance console of the request destination using an output form of said information providing server.

17. (currently amended): A concentrated maintenance management system for a portable telephone system which makes use of the Internet, comprising:

a plurality of portable telephone systems of one or a plurality of communication undertakers each including a radio base station, a mobile exchange and a remote maintenance console connected to said mobile exchange for performing a fault diagnosis operation of the portable telephone system;

said portable telephone systems being connected to each other by a fixed telephone network;

said remote maintenance console being connected to a portable telephone system concentrated maintenance management center ~~over the Internet~~;

said portable telephone system concentrated maintenance management center including an information providing server and a database server connected to each other for communication;

said remote maintenance console including means for transmitting an inquiry for similar data to a fault of the portable telephone system to said database server through said information providing server of said portable telephone system concentrated maintenance management center connected thereto ~~over the internet~~;

said database server including means for searching a diagnosis dictionary in response to the inquiry, extracting, when fault data similar to the fault is searched out, the similar fault data and transmitting the fault data as a fault inquiry result to said remote maintenance console through said information providing server.

18. (currently amended): A centralized maintenance management system for a portable telephone system as claimed in claim 17, wherein said remote maintenance console performs a fault diagnosis operation and, when the fault is recovered, transmits fault recovery data to said database server through said information providing server ~~connected over the Internet~~, and said database server includes dictionary updating means for receiving the fault recovery data and updating the fault data and the diagnosis dictionary stored in said database server.

19. (currently amended): A centralized maintenance management system for a portable telephone system as claimed in claim 17, wherein a maintenance supporting console ~~of a maintenance engineer or a developing block terminal of a developing engineer in charge of a~~ maker side is connected to said portable telephone system concentrated maintenance management center, and when data of a similar fault is not searched out from said diagnosis dictionary as a result of the search of said diagnosis dictionary by said database server, said remote maintenance terminal establishes a connection for communication to said maintenance supporting console or developing block terminal and issues a request for supporting of a maintenance operation and then performs a fault diagnosis operation of said portable telephone system on said remote maintenance console ~~side under maintenance supporting of the maintenance engineer or the developing engineer in charge of the maker side.~~

20. (currently amended): A centralized maintenance management system for a portable telephone system as claimed in claim 17, wherein said remote maintenance console includes transmission means for transmitting, when the fault is recovered, fault recovery data to said maintenance supporting console and/or said development block terminal of the maker side, and said database server includes dictionary updating means for receiving, when ~~the maintenance engineer or the developing engineer in charge of the maker side confirms the~~ fault recovery data is confirmed and transmits the transmitted confirmed ~~fault recovery data~~ from said maintenance supporting console and/or said development block terminal to said database server through said information providing server, the fault recovery data and updating the fault data and the diagnosis dictionary stored in said database server.

21. (currently amended): A centralized maintenance management system for a portable telephone system as claimed in claim 17, wherein a terminal of a repair center and a terminal of a distribution center are connected for communication to said portable telephone system concentrated maintenance management center, said remote maintenance console accessing, when a request for repair of a repair article which is a product or part of an object of repair of said portable telephone system is to be issued, said information providing server, inputting repair request contents in accordance with a repair request input form provided by said information providing server and transmitting the repair request information to said information providing server, the repair request information received by said information providing server being passed to said database server, said database server cumulatively storing the repair request information as repair request data, a repair return date being registered into the repair request data of said database server in accordance with a repair acceptance input form provided by said information providing server ~~by a maintenance supporting engineer of said portable telephone system concentrated maintenance management center~~, and said information providing server includes transmission means for electronically issuing a repair acceptance slip and transmitting the repair acceptance slip to said remote maintenance console of the repair request destination and said terminal of said repair center.

22. (original): A centralized maintenance management system for a portable telephone system as claimed in claim 21, wherein a printing instruction of a repair tag card to be applied to the repair article is issued from said terminal of said repair center in accordance with a repair tag

print form provided by said information providing server to print a repair tag by a printer, and the repair article with the repair tag applied thereto is sent to said repair center.

23. (currently amended): A centralized maintenance management system for a portable telephone system as claimed in claim 21, wherein, when the repair of the repair article is completed, repair contents recorded on the repair tag card and a repair completion date are inputted in accordance with a repair completion date input form provided by said information providing server and transferred to and stored into said database server, and an instruction to issue a repair completion report is issued from said terminal of said repair center, said information providing server including report issuance means for referring to the repair data in said database server to electronically issue a repair completion report from, said information providing server transmitting the repair completion report to said remote maintenance console of the repair request destination and said terminal of said distribution center ~~thereby over the~~ Internet.

24. (original): A centralized maintenance management system for a portable telephone system as claimed in claim 21, wherein said remote maintenance console inputs a repair progress disclosure request in accordance with a repair progress disclosure request form of said information providing server, and said database server includes means for extracting, upon reception of the repair progress disclosure request from said information providing server, identification information of the pertaining repair request article from the repair data stored in

said database server and transmitting the extracted data to said remote maintenance console in accordance with an output form of said information providing server.

25. (currently amended): A centralized maintenance management system for a portable telephone system as claimed in claim 21, wherein said remote maintenance console accesses said information providing server and inputs a preventive maintenance schedule preparation request in accordance with a preventive maintenance schedule preparation input form of said information providing server; a remote maintenance supporting console of said portable telephone system concentrated maintenance management system transmitting a state supervision data transfer request to said remote maintenance console through said information providing server; said remote maintenance console collecting state supervision data of radio base stations and mobile exchanges of said portable telephone system and transferring the state supervision data to said database server ~~over the Internet~~; said database server including data storage means for executing a preventive maintenance schedule preparation service of storing the received state supervision data; said remote maintenance supporting console including schedule preparation means for sending an analysis request for the repair data and the state supervision data to said information providing console, analyzing the state supervision data, spare apparatus and panel inventory management data and repair data stored in said database server through said information providing server, performing fault occurrence prediction and determining a failure ratio, calculating required quantities of spare apparatus and panels and storing the required quantities as predictive maintenance schedule data into said database server; said remote maintenance supporting console preparing a preventive maintenance schedule based on the

preventive maintenance schedule data stored in said database server, storing the preventive maintenance schedule into said database server through said information providing server and transmitting the preventive maintenance schedule to said remote maintenance console in accordance with a preventive maintenance schedule output form of said information providing server.

26. (original): A centralized maintenance management system for a portable telephone system as claimed in claim 25, wherein said remote maintenance console accesses said information providing server, inputs a service request for apparatus and panel appropriate inventory management in accordance with an appropriate inventory management service request input form of said information providing server and sends the service request to said remote maintenance supporting console of said portable telephone system; said remote maintenance supporting console executes the preventive maintenance schedule preparation service and issues an instruction to produce apparatus and panels to a terminal of a production block through said information providing server based on the preventive maintenance schedule obtained by the preventive maintenance schedule preparation service; after completion of the production, apparatus and panels corresponding to a shortage are delivered into said distribution center and performs inventory management in said distribution center; and, when said remote maintenance supporting table receives a notification representing that the appropriate inventory management has been achieved from said terminal of said distribution center through said information providing server, said remote maintenance supporting table transmits an appropriate inventory

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management process completion report to said remote maintenance console of the request
destination using an output form of said information providing server.